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ABSTRACT

The objective of this research was to develop optimum training conditions in the use of teacher performance tests (TPT). In order to attain this objective, TPT's were used as assessment instruments. This was believed necessary because the laws of learning indicate that improvement will not occur unless reinforcement follows learning. Subjects were prospective secondary teachers completing student teaching requirements. All seniors had to complete TPT under four sequentially different nine-week treatments. During each phase assessment, procedures were varied. Results indicate that optimum training conditions exist when reinforcement is made contingent on the attainment of prespecified minimum performance standards. (Author)

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THE USE OF TEACHING PERFORMANCE TESTS TO ASSESS THE ABILITY OF PROSPECTIVE TEACHERS TO RELATE LOWER-ORDER LEARNINGS IN PBTE PROGRAMS

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THE USE OF TEACHING PERFORMANCE TESTS TO ASSESS THE ABILITY OF PROSPECTIVE TEACHERS TO RELATE LOWER-ORDER LEARNINGS IN PBTE PROGRAMS

PBTE programs are based on the idea that teaching can be broken down into a large number of small parts and that reinforcement can be made contingent upon the successful performance of each part. Behaviorists would describe such an arrangement of contingencies of reinforcement as a fixed low-ratio schedule of reinforcement. Research indicates that this schedule of reinforcement is less effective in building response strength and maintaining it over long time periods than a variable high ratio schedule of reinforcement (Skinner, 1968). In order to have a variable high-ratio schedule of reinforcement criterion measures must be found to assess the terminal behavior of the entire program, and make final reinforcement contingent upon the minimum successful performance of that behavior. Such a procedure would require that prospective teachers integrate all lower-order learnings included in the entire program, and perform these properly relative to one another. Lower-order learnings in this two dimensional schedule of reinforcement would be on a fixed low-ratio schedule while the integration of parts would be on a variable high-ratio schedule of reinforcement. High-ratio because final reinforcement is delayed until all parts are performed, and variable because reinforcement remains in doubt until minimum successful performance standards are achieved.

Problem

Teaching performance tests have been used in a variety of ways as assessment and improvement instruments. McNeil and Popham have summarized their uses as assessment instruments in contract plans, and to collect

information about the instructional effectiveness of individual teachers (McNeil and Popham, 1973). More recently Popham has described various ways in which performance tests might be used to improve the performance of preservice and in service teachers (Popham, 1975). These include using performance tests to focus teachers' attention on pupil outcomes; to provide teachers with feedback as to the effects of their teacher behavior on pupil outcomes; and as a program evaluation assessment technique. Research has not been reported, however, on the usefulness of teaching performance tests to direct and energize the behavior of prospective teachers in PBTE programs. In this approach to the use of teaching performance tests an assumption is made that behavior is largely activated by anticipation of reinforcing consequences (Bandura and Perloff, 1967). Motivation of learning is largely regulated through various arrangements of contingencies of reinforcement. In order to get prospective teachers to relate lower-order learnings included in the overall PBTE program, and to perform these properly relative to one another an arrangement of contingencies of reinforcement must be developed which would withhold final reinforcement until integrative behavior is demonstrated.

Objective

The objective of this research was to use teaching performance tests to transform an existing fixed low-ratio schedule of reinforcement in a PBTE program into a variable high-ratio schedule of reinforcement. The setting was that of a PBTE program in which teacher behavior had been broken down into parts each of which had been stated as a behavioral objective, and a treatment developed which would enable prospective teachers to attain this objective. In order to be permitted to begin his student teaching

assignment on time the student must attain all pre-student teaching objectives prior to the beginning date of his student teaching assignment. Teaching performance tests were introduced into this program as a final objective to be attained prior to student teaching. In the fixed low-ratio schedule of reinforcement treatment students merely completed the teaching performance test prior to student teaching. In the variable high-ratio schedule of reinforcement treatment students had to attain a prespecified class performance level stated in the teaching performance test objective prior to student teaching. This latter procedure enabled us to give reinforcement for each of the small parts included in the program, and in addition delayed final reinforcement over the entire length of the program until students were able to integrate the parts and thereby achieve performance standards. The treatments were hypothesized to be related to dependent measures of teacher effectiveness as follows: students in a PBTE program in which teaching performance tests were used as part of a variable high-ratio schedule of reinforcement would score higher on criterion measures of teacher effectiveness than students in a PBTE program in which teaching performance tests were used as part of a fixed low-ratio schedule of reinforcement.

Method

Student teaching assignments begin each nine week period at ISU over the entire academic year. The constraints placed upon the research was such that we were unable to vary teaching performance test treatments within each nine week period. Consequently, the treatments described below were not administered to independent random samples of subjects within the same time period, but were administered sequentially to different samples of

subjects over the 1973-1974 academic year. Variance in sample size within treatments is due to the fact that parallel studies were being conducted for each nine week period and only a portion of students eligible for student teaching assignments could be used in this research. These students were randomly selected for the treatments described.

Subjects

All subjects (N=201) were junior or senior prospective secondary teachers drawn from all departments at ISU. All subjects were completing their student teaching requirements which deal with general methods topics, microteaching, and a final package involving the completion of a teaching performance test administered at University High Laboratory School at ISU. This last package was called the Integrative Laboratory Experience (ILE).

Procedures

The ILE treatment was divided into three stages summarized in Figure 1.

Figure 1
ILE Treatment Summary (1973-1974)

Stages	Treatment
1 Training	Construct a teaching performance test
2 Practice	Teach and reteach self-constructed teaching performance test. Measure amount of improvement from pre to posttest
3 Assessment	Compare level of skill-attainment against standards of non self-constructed tests

At stage 1, training, each student was required to read about teaching performance tests (Popham and Baker, 1972), study a model teaching performance test (Popham, 1972), and submit an original teaching performance test covering material in his subject matter field. The test consisted of an objective with a prespecified class performance level to be attained, content needed to attain the objective, a teaching strategy to be used, and two pupil tests (pretest and posttest). At stage 2, practice, each student was to teach his self-constructed teaching performance test to a learner group, and obtain pretest measures of their attitudes and achievement. Later he was to reteach the same lesson to the same pupils and obtain a posttest measure of their achievement. This part of ILE replicates procedures developed at UCLA (Popham, 1972). At stage 3, assessment, a teaching performance test was administered to each student under comparable test conditions using University High Laboratory School pupils as learner groups. The ILE student was given one of nine teaching performance tests developed at UCLA (Popham, 1972). These tests are content neutral as to teacher-pupil previous learning, and include class performance levels stated in the objective. These class performance levels were derived from field tests conducted at UCLA and replicated at ISU. These field test norms were used as criterion measures of the student's readiness for student teaching.

Data Source

The ILE experiment was divided into four nine-week phases as shown in Figure 2 below. In each phase the treatment was varied at stage 3, assessment, in order to test the main effect of using teaching performance tests as assessment instruments. In phase 1, admission to student teaching was made contingent upon the attainment of the prespecified class performance level stated in the objective of the teaching performance test constructed

at UCLA. Practice in phase 1 was not required. In phase 2, admission to student teaching was made contingent upon the student having completed a teaching performance test, but the attainment of the prespecified class performance level was not required. Practice in phase 2 was not required. In phase 3, admission to student teaching was again made contingent upon the completion of a teaching performance test without having to reach a prespecified class performance level. However, practice was required. In phase 4, students were required to both practice, and achieve prespecified class performance levels in order to be allowed to begin student teaching.

Figure 2
ILE Experiment Summary (1973-1974)

Stages	Phases			
	1	2	3	4
1 Training	Same	Same	Same	Same
2 Practice	None Required	None Required	Practice Required	Practice Required
3 Assessment	Performance Level Assessed	Performance Level Not Assessed	Performance Level Not Assessed	Performance Level Assessed

The criterion teaching performance tests used were eight of the nine Popham tests included in the Teaching Improvement Kit, Adult Form (Popham, 1972). In order to avoid contamination from University High School pupils becoming sensitized to these instruments, it was necessary to rotate their use in each phase of the experiment. During phases 1 and 3, the same four Popham minilessons were used but parallel posttests were administered by the subjects to their U-High pupils. During phases 2 and 4 the remaining four

Popham minilessons with their parallel posttests were used. In all phases, the subjects were randomly assigned to the Popham tests and the pupils (learner groups) were randomly assigned to each subject. All of the Popham teaching performance tests were assumed to be of comparable difficulty. The basic raw scores generated were pupil posttest means for each subject on the teaching performance test.

Results

Table 1 displays the means for the subjects in the treatment groups. A one-way ANOVA indicated that these means differed significantly at the .01 level with F=32.78 and $F_{.99}(3,197)$=3.88. The Scheffe S follow-up procedure was then used to explore the contrasts of interest. When the average of phases 1 and 4 (Performance Level Assessed) was compared with the average of phases 2 and 3 (Performance Level Not Assessed), an observed contrast of 10.71 (i.e., $\frac{69.81 + 75.20}{2} - \frac{50.49 + 73.10}{2}$) was obtained.

Table 1
Performance of Treatment Groups
(ILE Experiment 1973-74)

Phase	Treatment	n	$\bar{X}$	S.D.
1	Performance Level Assessed- Practice Not Required	42	69.81	14.65
2	Performance Level Not Assessed- Practice Not Required	53	50.49	14.19
3	Performance Level Not Assessed- Practice Required	91	73.10	13.27
4	Performance Level Assessed- Practice Required	15	75.20	15.15

This result was significant beyond the .01 level in favor of phases 1 and 4 (Performance Level Assessed). When all pairwise contrasts were examined, phases 1, 3, and 4 each produced signifcantly higher (α=.01) performance means than phase 2 but did not differ significantly from one another. Thus it may be inferred that phase 2 (Performance Level Not Assessed-Practice Not Required) accounted for the significant differences between the four treatments. Indeed, perhaps the most striking feature of Table 1 is the similar performance means of phases 1, 3, and 4 and their magnitudes as compared to the relatively depressed performance mean of phase 2. The extreme separation of the phase 4 and 2 means supports the hypothesis and would be expected because these treatments represent the optimal and minimal conditions of the experiment. However, the closeness of the phase 1 and 3 means to the phase 4 mean was somewhat surprising. One possible explanation of the closeness of the phase 1 and 4 means is that 60% of the subjects in phase 1 voluntarily practiced with teaching performance tests prior to assessment (In phase 2 less than 10% voluntarily practiced). In practice, then, the treatment conditions of phase 1 were virtually the same as those of phase 4. The closeness of the phase 3 and 4 means, however, is a matter open to speculation. It must be remembered that this finding along with the other findings are highly tentative due to the limitations of the quasi-experimental design used in the study. Perhaps the best that can be said is that the results tend to support our hypothesis and would warrant further investigations under more carefully controlled circumstances.

Conclusion

The strengths of PBTE programs grow out of the analysis of teacher behavior into a large number of small parts which can be stated explicitly,

and arranged in relation to each other as contingencies of reinforcement. The weaknesses that arise in such programs is due to the fragmentation among the parts included in the overall program, and in the fixed low-ratio schedule of reinforcement which results from the extreme reductionism of such programs. Teaching performance tests can be used to correct these weaknesses in PBTE programs. Our study indicates that when performance tests with prespecified performance levels stated within test objectives are used as instruments to assess lower-order learnings in PBTE programs the motivation and learning of students is increased. Obversely when teaching performance tests are linearly arranged in relation to preceeding learnings, and not used as assessment instruments the motivation and learning of students is decreased. The current conception of teacher evaluation is that assessment of teachers is useless, and that the function of teacher evaluation should be to help teachers develop self-improvement skills. In this view the use of teaching performance tests along with observational systems, and rating instruments should be limited to feedback not assessment instruments. This study suggests that assessment without improvement is useless, but that improvement without assessment is unrealistic. Used as assessment instruments teaching performance tests can increase the integrative behavior of prospective teachers.

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